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TRANSLATION OF AMENDMENT (SEP.13.2005)

UNDER ARTICLE 34 OF PCT

- We amended claims 1 and 5-7.
- We added claims 8-15.

CLAIMS

1. (Amended) A plasma processing apparatus comprising:

a processing container having a holding stage that holds a substrate to be processed;

a micro-wave transmission window provided on or above the processing container, opposite to the substrate to be processed placed on the holding stage;

a micro-wave antenna provided on or above the micro-wave transmission window, opposite to the micro-wave transmission window, for supplying a micro-wave into the processing container;

a micro-wave electric power supplying source connected to the micro-wave antenna;

an electric-field measuring unit that measures electric field strength of the micro-wave supplied by the micro-wave antenna; and

a controlling unit that controls the micro-wave electric power supplying source based on the electric field strength measured by the electric-field measuring unit,

wherein the electric-field measuring unit is arranged at a node of a standing wave formed in the micro-wave transmission window.

2. A plasma processing apparatus according to claim 1, wherein

the micro-wave antenna is fed via coaxial waveguides, and

the micro-wave antenna has: an antenna main body having an opening; a micro-wave radiation surface provided on or above the antenna main body so as to cover the opening, the micro-wave radiation surface having a plurality of slots; and a dielectric plate provided between the antenna main body and the micro-wave radiation surface.

3. A plasma processing apparatus according to claim 1 or 2, wherein

the micro-wave antenna is a radial line slot antenna.

4. A plasma processing apparatus according to any of claims 1 to 3, wherein

the electric-field measuring unit includes an electric-field

measuring probe.

5. (Amended) A plasma processing apparatus according to claim 4, wherein

the electric-field measuring probe has a structure in which a threaded portion and a measurement terminal that consist of an electric conductor are inserted into an outside container having a substantially cylindrical shape and made of an electric insulator, and in which the threaded portion and the measurement terminal are electrically connected by a semiconductor material.

6. (Amended) A plasma processing apparatus according to claim 5, wherein

the semiconductor material is a diode.

7. (Amended) A plasma processing apparatus according to claim 5 or 6, wherein

the electric-field measuring probe has an opening for infilling of an insulation material.

8. (Added) A plasma processing apparatus according to any of claims 1 to 7, wherein

the electric-field measuring unit is adapted to measure an electric voltage on or above a surface of the micro-wave transmission window.

9. (Added) A plasma processing apparatus according to any of claims 1 to 8, wherein

the electric-field measuring unit is attached on or above the micro-wave antenna.

10. (Added) A plasma processing apparatus according to any of claims 1 to 9, wherein

a plurality of electric-field measuring units is provided.

11. (Added) A plasma processing apparatus according to claim 10, wherein

the plurality of electric-field measuring units is arranged in a linear direction corresponding to a radial direction of a disk-like antenna main body.

12. (Added) A plasma processing apparatus according to claim 10, wherein

one of the plurality of electric-field measuring units is arranged at a node of the standing wave formed in the micro-wave transmission window.

13. (Added) A plasma processing apparatus according to claim 10, wherein

when a wavelength of the standing wave formed in the micro-wave transmission window is expressed as λ , a distance between the plurality of electric-field measuring units is $\lambda/4$ multiplied by an odd number.

14. (Added) A plasma processing apparatus according to claim 10, wherein

when a wavelength of the standing wave formed in the micro-wave transmission window is expressed as λ , a distance between the plurality of electric-field measuring units is $\lambda/4$ multiplied by an even number.

15. (Added) A plasma processing apparatus according to any of claims 1 to 14, further comprising

a controlling unit that converts into digital data and records measurement result by the electric-field measuring unit.